

52339AUSM1.ST25
SEQUENCE LISTING

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Rubanyi, Gabor

<120> Gene Therapy for Critical Limb Ischemia with Wild Type or Mutant eNOS

<130> 52339AUSM1

<150> US 60/403,637

<151> 2002-08-16

<160> 8

<170> PatentIn version 3.2

<210> 1

<211> 1203

<212> PRT

<213> Homo sapiens

<400> 1

Met Gly Asn Leu Lys Ser Val Ala Gln Glu Pro Gly Pro Pro Cys Gly
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Leu Gly Leu Gly Leu Gly Leu Gly Leu Cys Gly Lys Gln Gly Pro Ala
20 25 30

Thr Pro Ala Pro Glu Pro Ser Arg Ala Pro Ala Ser Leu Leu Pro Pro
35 40 45

Ala Pro Glu His Ser Pro Pro Ser Ser Pro Leu Thr Gln Pro Pro Glu
50 55 60

Gly Pro Lys Phe Pro Arg Val Lys Asn Trp Glu Val Gly Ser Ile Thr
65 70 75 80

Tyr Asp Thr Leu Ser Ala Gln Ala Gln Gln Asp Gly Pro Cys Thr Pro
85 90 95

Arg Arg Cys Leu Gly Ser Leu Val Phe Pro Arg Lys Leu Gln Gly Arg
100 105 110

Pro Ser Pro Gly Pro Pro Ala Pro Glu Gln Leu Leu Ser Gln Ala Arg
115 120 125

Asp Phe Ile Asn Gln Tyr Tyr Ser Ser Ile Lys Arg Ser Gly Ser Gln
130 135 140

Ala His Glu Gln Arg Leu Gln Glu Val Glu Ala Glu Val Ala Ala Thr
145 150 155 160

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Gly Thr Tyr Gln Leu Arg Glu Ser Glu Leu Val Phe Gly Ala Lys Gln
 165 170 175

Ala Trp Arg Asn Ala Pro Arg Cys Val Gly Arg Ile Gln Trp Gly Lys
 180 185 190

Leu Gln Val Phe Asp Ala Arg Asp Cys Arg Ser Ala Gln Glu Met Phe
 195 200 205

Thr Tyr Ile Cys Asn His Ile Lys Tyr Ala Thr Asn Arg Gly Asn Leu
 210 215 220

Arg Ser Ala Ile Thr Val Phe Pro Gln Arg Cys Pro Gly Arg Gly Asp
 225 230 235 240

Phe Arg Ile Trp Asn Ser Gln Leu Val Arg Tyr Ala Gly Tyr Arg Gln
 245 250 255

Gln Asp Gly Ser Val Arg Gly Asp Pro Ala Asn Val Glu Ile Thr Glu
 260 265 270

Leu Cys Ile Gln His Gly Trp Thr Pro Gly Asn Gly Arg Phe Asp Val
 275 280 285

Leu Pro Leu Leu Leu Gln Ala Pro Asp Glu Pro Pro Glu Leu Phe Leu
 290 295 300

Leu Pro Pro Glu Leu Val Leu Glu Val Pro Leu Glu His Pro Thr Leu
 305 310 315 320

Glu Trp Phe Ala Ala Leu Gly Leu Arg Trp Tyr Ala Leu Pro Ala Val
 325 330 335

Ser Asn Met Leu Leu Glu Ile Gly Gly Leu Glu Phe Pro Ala Ala Pro
 340 345 350

Phe Ser Gly Trp Tyr Met Ser Thr Glu Ile Gly Thr Arg Asn Leu Cys
 355 360 365

Asp Pro His Arg Tyr Asn Ile Leu Glu Asp Val Ala Val Cys Met Asp
 370 375 380

Leu Asp Thr Arg Thr Thr Ser Ser Leu Trp Lys Asp Lys Ala Ala Val
 385 390 395 400

Glu Ile Asn Val Ala Val Leu His Ser Tyr Gln Leu Ala Lys Val Thr
 405 410 415

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Ile Val Asp His His Ala Ala Thr Ala Ser Phe Met Lys His Leu Glu
420 425 430

Asn Glu Gln Lys Ala Arg Gly Gly Cys Pro Ala Asp Trp Ala Trp Ile
435 440 445

Val Pro Pro Ile Ser Gly Ser Leu Thr Pro Val Phe His Gln Glu Met
450 455 460

Val Asn Tyr Phe Leu Ser Pro Ala Phe Arg Tyr Gln Pro Asp Pro Trp
465 470 475 480

Lys Gly Ser Ala Ala Lys Gly Thr Gly Ile Thr Arg Lys Lys Thr Phe
485 490 495

Lys Glu Val Ala Asn Ala Val Lys Ile Ser Ala Ser Leu Met Gly Thr
500 505 510

Val Met Ala Lys Arg Val Lys Ala Thr Ile Leu Tyr Gly Ser Glu Thr
515 520 525

Gly Arg Ala Gln Ser Tyr Ala Gln Gln Leu Gly Arg Leu Phe Arg Lys
530 535 540

Ala Phe Asp Pro Arg Val Leu Cys Met Asp Glu Tyr Asp Val Val Ser
545 550 555 560

Leu Glu His Glu Thr Leu Val Leu Val Val Thr Ser Thr Phe Gly Asn
565 570 575

Gly Asp Pro Pro Glu Asn Gly Glu Ser Phe Ala Ala Ala Leu Met Glu
580 585 590

Met Ser Gly Pro Tyr Asn Ser Ser Pro Arg Pro Glu Gln His Lys Ser
595 600 605

Tyr Lys Ile Arg Phe Asn Ser Ile Ser Cys Ser Asp Pro Leu Val Ser
610 615 620

Ser Trp Arg Arg Lys Arg Lys Glu Ser Ser Asn Thr Asp Ser Ala Gly
625 630 635 640

Ala Leu Gly Thr Leu Arg Phe Cys Val Phe Gly Leu Gly Ser Arg Ala
645 650 655

Tyr Pro His Phe Cys Ala Phe Ala Arg Ala Val Asp Thr Arg Leu Glu
660 665 670

Glu Leu Gly Gly Glu Arg Leu Leu Gln Leu Gly Gln Gly Asp Glu Leu

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675                               680                               685
Cys Gly Gln Glu Glu Ala Phe Arg Gly Trp Ala Gln Ala Ala Phe Gln
690                               695                               700

Ala Ala Cys Glu Thr Phe Cys Val Gly Glu Asp Ala Lys Ala Ala Ala
705                               710                               715                               720

Arg Asp Ile Phe Ser Pro Lys Arg Ser Trp Lys Arg Gln Arg Tyr Arg
725                               730                               735

Leu Ser Ala Gln Ala Glu Gly Leu Gln Leu Leu Pro Gly Leu Ile His
740                               745                               750

Val His Arg Arg Lys Met Phe Gln Ala Thr Ile Arg Ser Val Glu Asn
755                               760                               765

Leu Gln Ser Ser Lys Ser Thr Arg Ala Thr Ile Leu Val Arg Leu Asp
770                               775                               780

Thr Gly Gly Gln Glu Gly Leu Gln Tyr Gln Pro Gly Asp His Ile Gly
785                               790                               795                               800

Val Cys Pro Pro Asn Arg Pro Gly Leu Val Glu Ala Leu Leu Ser Arg
805                               810                               815

Val Glu Asp Pro Pro Ala Pro Thr Glu Pro Val Ala Val Glu Gln Leu
820                               825                               830

Glu Lys Gly Ser Pro Gly Gly Pro Pro Pro Gly Trp Val Arg Asp Pro
835                               840                               845

Arg Leu Pro Pro Cys Thr Leu Arg Gln Ala Leu Thr Phe Phe Leu Asp
850                               855                               860

Ile Thr Ser Pro Pro Ser Pro Gln Leu Leu Arg Leu Leu Ser Thr Leu
865                               870                               875                               880

Ala Glu Glu Pro Arg Glu Gln Gln Glu Leu Glu Ala Leu Ser Gln Asp
885                               890                               895

Pro Arg Arg Tyr Glu Glu Trp Lys Trp Phe Arg Cys Pro Thr Leu Leu
900                               905                               910

Glu Val Leu Glu Gln Phe Pro Ser Val Ala Leu Pro Ala Pro Leu Leu
915                               920                               925

Leu Thr Gln Leu Pro Leu Leu Gln Pro Arg Tyr Tyr Ser Val Ser Ser
930                               935                               940

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Ala Pro Ser Thr His Pro Gly Glu Ile His Leu Thr Val Ala Val Leu
 945 950 955 960

Ala Tyr Arg Thr Gln Asp Gly Leu Gly Pro Leu His Tyr Gly Val Cys
 965 970 975

Ser Thr Trp Leu Ser Gln Leu Lys Pro Gly Asp Pro Val Pro Cys Phe
 980 985 990

Ile Arg Gly Ala Pro Ser Phe Arg Leu Pro Pro Asp Pro Ser Leu Pro
 995 1000 1005

Cys Ile Leu Val Gly Pro Gly Thr Gly Ile Ala Pro Phe Arg Gly
 1010 1015 1020

Phe Trp Gln Glu Arg Leu His Asp Ile Glu Ser Lys Gly Leu Gln
 1025 1030 1035

Pro Thr Pro Met Thr Leu Val Phe Gly Cys Arg Cys Ser Gln Leu
 1040 1045 1050

Asp His Leu Tyr Arg Asp Glu Val Gln Asn Ala Gln Gln Arg Gly
 1055 1060 1065

Val Phe Gly Arg Val Leu Thr Ala Phe Ser Arg Glu Pro Asp Asn
 1070 1075 1080

Pro Lys Thr Tyr Val Gln Asp Ile Leu Arg Thr Glu Leu Ala Ala
 1085 1090 1095

Glu Val His Arg Val Leu Cys Leu Glu Arg Gly His Met Phe Val
 1100 1105 1110

Cys Gly Asp Val Thr Met Ala Thr Asn Val Leu Gln Thr Val Gln
 1115 1120 1125

Arg Ile Leu Ala Thr Glu Gly Asp Met Glu Leu Asp Glu Ala Gly
 1130 1135 1140

Asp Val Ile Gly Val Leu Arg Asp Gln Gln Arg Tyr His Glu Asp
 1145 1150 1155

Ile Phe Gly Leu Thr Leu Arg Thr Gln Glu Val Thr Ser Arg Ile
 1160 1165 1170

Arg Thr Gln Ser Phe Ser Leu Gln Glu Arg Gln Leu Arg Gly Ala
 1175 1180 1185

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Val Pro Trp Ala Phe Asp Pro Pro Gly Ser Asp Thr Asn Ser Pro
 1190 1195 1200

<210> 2
 <211> 37
 <212> PRT
 <213> Homo sapiens

<400> 2

Ala Ala Lys Gly Thr Gly Ile Thr Arg Lys Lys Thr Phe Lys Glu Val
 1 5 10 15

Ala Asn Ala Val Lys Ile Ser Ala Ser Leu Met Gly Thr Val Met Ala
 20 25 30

Lys Arg Val Lys Ala
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<210> 3
 <211> 37
 <212> PRT
 <213> Bos taurus

<400> 3

Ala Thr Lys Gly Ala Gly Ile Thr Arg Lys Lys Thr Phe Lys Glu Val
 1 5 10 15

Ala Asn Ala Val Lys Ile Ser Ala Ser Leu Met Gly Thr Leu Met Ala
 20 25 30

Lys Arg Val Lys Ala
 35

<210> 4
 <211> 38
 <212> PRT
 <213> Homo sapiens

<400> 4

Gly Thr Asn Gly Thr Pro Thr Lys Arg Arg Ala Ile Gly Phe Lys Lys
 1 5 10 15

Leu Ala Glu Ala Val Lys Phe Ser Ala Lys Leu Met Gly Gln Ala Met
 20 25 30

Ala Lys Arg Val Lys Ala
 35

<210> 5
 <211> 38
 <212> PRT

<213> Rattus rattus

<400> 5

Gly Thr Asn Gly Thr Pro Thr Lys Arg Arg Ala Ile Gly Phe Lys Lys
 1 5 10 15

Leu Ala Glu Ala Val Lys Phe Ser Ala Lys Leu Met Gly Gln Ala Met
 20 25 30

Ala Lys Arg Val Lys Ala
 35

<210> 6

<211> 37

<212> PRT

<213> Rattus rattus

<400> 6

Asp Glu Lys Leu Arg Pro Arg Arg Arg Glu Ile Arg Phe Thr Val Leu
 1 5 10 15

Val Lys Ala Val Phe Phe Ala Ser Val Leu Met Arg Lys Val Met Ala
 20 25 30

Ser Arg Val Arg Ala
 35

<210> 7

<211> 37

<212> PRT

<213> Mus musculus

<400> 7

Asn Glu Lys Leu Arg Pro Arg Arg Arg Glu Ile Arg Phe Arg Val Leu
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Val Lys Val Val Phe Phe Ala Ser Met Leu Met Arg Lys Val Met Ala
 20 25 30

Ser Arg Val Arg Ala
 35

<210> 8

<211> 37

<212> PRT

<213> Homo sapiens

<400> 8

Asp Glu Lys Arg Arg Pro Lys Arg Arg Glu Ile Pro Leu Lys Val Leu
 1 5 10 15

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Val Lys Ala Val Leu Phe Ala Cys Met Leu Met Arg Lys Thr Met Ala
20 25 30
Ser Arg Val Arg Val
35